REMARKS

Claims 1, 3-18, and 20-24 are in the case and presented for reconsideration.

Claims 2 and 19 have been cancelled without prejudice.

Claims 1, 14, 16, and 24 have been amended.

Claims 1, 16 and 24 has been amended to include the limitation that the radiation is near infra red radiation having a wavelength between about 700 nm to about 2000 nm. Support for this amendment is found in claim 2 and claim 19.

Claim 14 has been amended to correct for proper Markush claim style.

The specification has been amended to correct an obvious typographical error. The abstract has been amended in accordance with the examiner's helpful suggestion.

Objections to the specification

The Abstract was objected to by the examiner pursuant to 37 CFR 1.72. Applicants wish to thank the examiner for the helpful suggestion and submit that the amendment to the Abstract overcomes this objection by replacing the terms found objectionable by the examiner. Accordingly, Applicants request the objection be withdrawn.

Rejections under 35 U.S.C. § 102

Claims 16-23 were rejected under 35 U.S.C. § 102 (e) (sic, 102(a)) as being anticipated by Ringlien (US 6,067,155). Applicants submit that the amendment to claim 16 overcomes this rejection.

Applicants' claimed invention is an apparatus having near infrared radiation source positioned to emit radiation having a wavelength of between about 700 nm to about 2000 nm at a colored article, and a detector positioned to measure the near infrared radiation returned from or passed through the colored article. Applicant submits that Ringlien ('155) does not teach or suggest the presently claimed invention.

Ringlien discloses an apparatus for detecting stress and opaque variations in glass articles. The apparatus has a radiation source for producing light energy in both the visible and infrared ranges; a light sensor for producing electrical signals responsive to light energy in both the visible and infrared ranges incident thereon; and crossed polarizers disposed on opposite sides of

the container for directing visible light energy through the container and onto the light sensor in such a way that stress variations in the container appear as bright signals against a gray background and opaque variations appear as dark signals against the gray background

Applicants submit that Ringlien does not teach the present invention since it is clear that Ringlien teaches an apparatus having at least three components, a radiation source that produces both visible and infrared radiation, cross polarizers for polarization of the light, and a detector that detects both visible and infrared radiation. However, Applicants' invention the radiation source emit primarily radiation in the near infrared wavelength of from 700 nanometers to 2000 nanometers. Applicants do not utilize a polarizer and need only do so to block all visible light from reaching the detector since it is only the near infrared wavelength that Applicants want to measure. Moreover, Applicants are concerned with detecting radiation only in the near infrared range and do not measure visible light. This is not taught or suggested by Ringlien.

Accordingly, Applicants submit that Ringlien (US 6,067,155) does not teach the claimed apparatus of claims 16-18, and 20-23 and respectfully requests the examiner to withdraw the under 35 U.S.C. § 102 (e) rejection.

Rejections under 35 U.S.C. § 103

Claims 1-15 and 24 were rejected under 35 U.S.C. § 103 (a) as being obvious over Ringlien ('155) in view of Plester, et al. (US 5,067,616). Applicants submit that the amendment to claims 1 and 24 overcomes this rejection.

As discussed above, Ringlien does not teach or suggest Applicants' claimed method for detecting defects in a plastic colored article. The purpose of Ringlien's method is for inspecting and detecting stress and opaque variations in glass articles that affect the optical properties of the containers. The stress and opaque variations are due to different types of glass or impurities being mixed together during the formation stage of the glass container. Applicants submit that Plester, et al. does not overcome the deficiencies of Ringlien or motivate one skilled in the art to modify Ringlien to derive the present invention.

Ringlien teaches a method using two different types of light radiation, visible and infrared radiation, and a detects both types of radiation for assessing the quality of the glass article. Ringlien's method includes the steps of directing light visible and infrared light energy onto the

container in such a way that a first wavelength of light energy (e.g., polarized visible light energy) is responsive to a first type of commercial variation in the container (e.g., stress variations), and a second wavelength of the light energy different from the first wavelength (e.g., infrared light energy) is responsive to a second type of commercial variation different from the first type (e.g., opaque variations). The light energy from the container is directed onto a light sensor capable of detecting both visible and infrared radiation, and commercial variations are detected as a function of light energy at the first and second wavelengths incident on the light sensor. Infrared light energy is directed through a container onto the light sensor in such a way as to create at the light sensor a normally gray background, and such that opaque variations in the container appear as dark signals against the gray background. Visible light energy is directed through crossed polarizers disposed on opposite sides of the container and operate on the visible light energy in such a way as to block transmission of visible light to the camera in the absence of stress variations in the container. However, if there are stress variations in the container, the detector detects the visible light and the stress variations appear as bright signals against the gray background at the sensor. The stress and opaque variations are thus detected as a function of the (visible light) bright and dark signals against the gray background at the sensor.

Plester, et al. teach a method for detecting the presence of contaminants and hazardous materials in recycled containers by detecting the residue of the product originally packaged in the container. Briefly, Plester, et al. teach sampling and analyzing the residue in the containers and comparing the physical response of the sample residue with the reference range representative of the physical response of product residue; rejecting the container when the physical response of the sample residue does not correlate to the physical response of the product residue; classifying the rejected containers into definitely rejected containers and suspect containers having an overlapping signal characteristic of product residue; and reinspecting the suspect containers utilizing at least one additional method of detection to accept or reject the suspect containers. The problem that Plester, et al. sought to solve was to reduce the analytical problem in trying to detect and analyze a vast array of different foreign substances that may be present in the recycled container, and instead focus on what should be present from known and relatively few product residues whose presence is used to indicate that the container was not contaminated.

Accordingly, Applicants submit that Plester, et al. would not motivate one skilled in the art to modify Ringlien to utilize only near infrared radiation for detecting defects or providing data

in a plastic article. Applicants also submit that Plester et al. would not motivate one skilled in the art to modify Ringlien to omit using or detecting radiation in the visible wavelength region or to not cross polarize the visible light since it is clear from Ringlien that the visible light is how the defects, if any, are presented for observation. The infrared radiation only provides a background that allows quick visual contrast for observing the defect. Moreover, Ringlien is concerned with only stress and opaque qualities of the glass and Plester et al. only with foreign contaminants, neither Ringlien nor Plester et al., alone or in combination, would motivate one skilled in the art to use near infrared radiation alone to detect: haze, unmelts, bubbles, voids, termination of internal layers in a multilayer structure, holes of internal layers in a multilayer structure, content fill level or foreign objects in contents of the plastic container.

Accordingly, Applicants submit that claims 1, 3-18, 20-24 are patentably distinguishable over Ringlien alone or in combination with Plester et al. and respectfully request the examiner to withdraw the earlier 35 U.S.C. § § 102 and 103 rejections and pass the application to allowance at the examiner's earliest convenience.

Respectfully submitted,

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